

EXHIBIT B

**TO THE DECLARATION OF ARPITA
BHATTACHARYYA IN SUPPORT OF ASETEK
DANMARK A/S'S MOTION FOR PARTIAL
SUMMARY JUDGMENT**

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

ASETEK DANMARK A/S

Plaintiff and
Counterdefendant,

v.

COOLIT SYSTEMS, INC.,

Defendant and
Counterclaimant.

COOLIT SYSTEMS USA INC., COOLIT
SYSTEMS ASIA PACIFIC LIMITED,
COOLIT SYSTEMS (SHENZHEN) CO.,
LTD.,

Defendants,

CORSAIR GAMING, INC. and CORSAIR
MEMORY, INC.

Defendants.

CASE NO. 3:19-cv-00410-EMC

**REBUTTAL EXPERT REPORT OF DR. DAVID B. TUCKERMAN REGARDING NON-
INFRINGEMENT OF U.S. PATENT NOS. 8,746,330; 9,603,284; AND 10,274,266**

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I. INTRODUCTION

1. I am the same David B. Tuckerman who submitted an expert report in this case on November 3, 2021 (the “Invalidity Report”) at the request of counsel for Asetek Danmark A/S (“Asetek”) regarding invalidity of certain claims of U.S. Patent Nos. 8,746,330 (“the ‘330 patent”); 9,603,284 (“the ‘284 patent”); and 10,274,266 (“the ‘266 patent”)(collectively “the Asserted CoolIT Patents”).
2. I was asked by counsel for Asetek to consider and respond to certain opinions set forth in the expert report of Himanshu Pokharna, Ph.D., dated November 3, 2021, regarding infringement of the Asserted CoolIT Patents (the “Pokharna Infringement Report”). My opinions regarding non-infringement of the Asserted CoolIT Patents are set forth below in this Report (the “Non-Infringement Report”). In particular, this Non-Infringement Report addresses my opinions regarding allegations by Defendant and Counterclaimant CoolIT Systems Inc. (“CoolIT”) that certain Asetek products infringe the asserted claims of the Asserted CoolIT Patents.^{1,2}
3. This Non-Infringement Report is based on information currently available to me. I understand that I may have an opportunity to supplement or amend my opinions based on further discovery and information provided in this case. Any citation to evidence in this Non-Infringement Report is intended to be exemplary, and not intended to be exhaustive. I reserve the right to create additional summaries, tutorials, demonstrations, charts, drawings, tables and/or animations that may be appropriate to supplement and demonstrate my opinions at trial. I also understand that I may have the opportunity to use

¹ The Pokharna Infringement Report is silent about whether the accused Asetek products infringe the Asserted CoolIT Patents under direct or indirect theory of infringement.

² Although the Pokharna Infringement Report includes CoolIT’s infringement positions for the previously-asserted claims of CoolIT’s ’567 patent and claims 1, 2, 5, and 9 of the ’266 patent, those claims were found unpatentable by the PTAB. It is my understanding that the district court judge has said that the claims found unpatentable/invalid by the PTAB would be severed from the current case and would not go to trial. Therefore, I have not presented non-infringement positions against the asserted claims of the ’567 patent and claims 1, 2, 5, and 9 of the ’266 patent in this Non-Infringement Report. I reserve the right to supplement my Non-Infringement Report to present non-infringement positions against the ’567 patent claims and claims 1, 2, 5, and 9 of the ’266 patent if those claims are found to be valid or otherwise becomes relevant to this case at a later date.

the accused Asetek products to further demonstrate their structure and support/demonstrate my opinions in this Non-Infringement Report.

4. In reaching the opinions set forth herein, I have reviewed and considered the products and materials identified in Exhibit A and all materials identified in my Non-Infringement Report, and I have also relied on my experience, education, and expertise. If I am called at trial to provide expert testimony regarding the opinions I have formed resulting from my research and investigation as set forth in this Non-Infringement Report, I intend to support or summarize my opinions with prepared appropriate visual aids, and refer to some or all of the documents and information cited in this Non-Infringement Report.
5. I am being compensated at the rate of \$475 per hour for my work on this case. My compensation does not depend on the outcome of this litigation.
6. My qualification and relevant experiences are summarized in my Invalidity Report. That portion of my Invalidity Report is incorporated herein by reference. A copy of my CV is attached as Exhibit F to my Invalidity Report.

II. SUMMARY OF OPINION

7. It is my understanding that the Stipulation Regarding Representative Products dated May 20, 2021 (“Stipulation,” Dkt. 254) provides the following:
 - a. The H55 is representative of the Asetek desktop products listed in Section I.B of CoolIT’s Second Amended Infringement Contentions and Disclosures dated September 11, 2020 (Dkt. No. 158-8) (“CoolIT Infringement Contentions”) that include Asetek’s Gen 4 pump design, and any Asetek data center or server products that use a split-flow design as in the Gen 4 design.
 - b. The H80i GT is representative of the Asetek desktop products listed in Section I.B of the CoolIT Infringement Contentions that include Asetek’s Gen 5 pump design, and any Asetek data center or server products that use a split-flow design as in the Gen 5 design.
 - c. The H100i PRO (RGB) is representative of the Asetek desktop products listed in Section I.B of the CoolIT Infringement Contentions that include Asetek’s Gen 6 pump design, and any Asetek data center or server products that use a split-flow design as in the Gen 6 design.

- d. The NZXT Kraken X53 is representative of the Asetek desktop products listed in Section I.B of the CoolIT Infringement Contentions that include Asetek's Gen 7 pump design, and any Asetek data center or server products that use a split-flow design as in the Gen 7 design.
8. It is my opinion that the H55, the H80i GT, the H100i PRO (RGB), and the NZXT Kraken X53, which are representative of the accused Asetek products, do not literally infringe the asserted claims of the Asserted CoolIT Patents.³ My opinions about the H55, the H80i GT, the H100i PRO (RGB), and the NZXT Kraken X53 products apply equally to the other accused Gen 4, Gen 5, Gen 6, and Gen 7 products, respectively.
9. In particular, it is my opinion that:

 - a. The accused Gen 4, Gen 5, Gen 6, and Gen 7 Asetek products do not infringe the asserted claims 1, 4, 12, 14, and 15 of the '330 patent.
 - b. The accused Gen 4, Gen 5, Gen 6, and Gen 7 Asetek products do not infringe the asserted claims 1, 3, 5, 15, and 20 of the '284 patent.
 - c. The accused Gen 4, Gen 5, Gen 6, and Gen 7 Asetek products do not infringe the asserted claims 13 and 15 of the '266 patent.

10. In forming my opinions, I have considered the '330 patent, the '284 patent, and the '266 patent, the Court's claim constructions, analyzed images of the H55, H80iGT, H100i PRO (RGB), and NZXT Kraken X53 products taken by counsel, as well as the other materials listed in Exhibit A. I have also disassembled and analyzed a Thermaltake Water 3.0 Performer C (Gen 4) device, a H80i V2 (Gen 5) device, an ASUS ROG Strix LC 120 (Gen 6) device, and a Kraken X53 (Gen 7) device, and compared them to the images of the H55, H80iGT, H100i PRO (RGB), and NZXT Kraken X53 products. The images taken by counsel and used in this Non-Infringement Report match the actual Gen 4, Gen 5, Gen 6, and Gen 7 products analyzed by me.

³ CoolIT has not accused infringement of the Asserted CoolIT Patents under the doctrine of equivalents.

III. LEGAL STANDARD

A. General Matters

11. In forming and expressing my opinions and considering the subject matter of the Asserted CoolIT Patents in view of the accused Asetek products, I am relying on certain legal principles that Asetek's counsel in this case explained to me. My understanding of these concepts is summarized below.
12. I understand that determining whether an accused product or method infringes a patented invention involves two steps. First, the asserted patent claims are construed to ascertain their proper scope. I understand that the Court's claim constructions govern in this case. Second, the construed claims are compared to the allegedly infringing products or processes to determine whether those products or processes fall within the scope of the asserted patent claims either literally or under the doctrine of equivalents.
13. I am further advised that an accused product or method literally infringes a patent claim if all the elements of the claim, as construed by the Court, are present in the accused product or method. If any element of the claim does not appear in the accused product or method exactly, that claim is not literally infringed.
14. I am further advised that a claim is said to depend on another claim if it references that other claim. Such a dependent claim is understood to incorporate by reference all of the elements of the claim on which it depends. A claim that does not depend on any other claim is known as an independent claim. I understand that if an independent claim is not infringed by the accused product or process, then it is not possible for any other claim that depends on the independent claim to be infringed.
15. I am further advised that a party may be accused of two types of indirect infringement: inducement and contributory infringement. Dr. Pokharna has not opined on induced or contributory infringement in his Infringement Report. Therefore, I have not addressed these topics in this Non-Infringement Report.

B. Claim Construction

16. In my Invalidity Report, I set forth my understanding of the Court’s orders on Claim Construction. That portion of my Invalidity Report (specifically Section V) is incorporated herein by reference. I have accepted and applied the Court’s claim constructions in my analysis.

C. Person of Ordinary Skill in the Art

17. In my Invalidity Report, I set forth my understanding of the qualifications of a person of ordinary skill in the art at the time of the effective filing dates of the Asserted CoolIT Patents. That portion of my Invalidity Report (specifically Section VI) is incorporated herein by reference.
18. As discussed in my Invalidity Report, the effective filing date of the asserted claims of the ’330 and ’284 patents and asserted claims 13 and 15 of the ’266 patent is August 9, 2007.

IV. NON-INFRINGEMENT ANALYSIS

19. Below, I have reported separately on Asetek’s Generation 4, 5, 6, and 7 products because the design, structure, and internal construction of each Generation of Asetek products is substantially different from each other with respect to the Asserted CoolIT patents. Specifically, the manifolding of cooling liquid into and out of the cold plate (the “heat spreader plate”), which is the primary subject matter of the asserted CoolIT claims, is different in each of the Generation 4-7 products. Specifically, the positions and configurations of the alleged inlet and outlet headers and the alleged inlet and outlet ports, and the configuration of the plate or the gasket (which allegedly defines the claimed seal, the inlet into the microchannels, and the flow path through the cold plate) are different in each Generation of products. For example, the accused Asetek Gen 4 products include a rigid metal plate over the microchannels and fins of the cold plate, whereas the accused Asetek Gen 5, 6, and 7 products have a compliant rubber gasket over the microchannels and fins. Likewise, the accused Asetek Gen 5 products have two inlets into the microchannel array on the cold plate, whereas the accused Asetek Gen 6 and Gen 7 products have a single inlet and thus a different flow path through the cold

plate. Although each Generation of the accused Asetek products allegedly includes “split-flow,” the manner in which the alleged “split-flow” is implemented is different in each Generation of Asetek products.

20. I have used the H55, the H80i GT, the H100i PRO (RGB), and the NZXT Kraken X53 as representative of the accused Asetek Gen 4, Gen 5, Gen 6, and Gen 7 products, respectively, in my analysis below.

A. The asserted claims of the ’330 patent are not infringed by the accused Asetek products

21. As described in detail below, the accused Gen 4-7 Asetek products do not literally infringe the asserted claims 1, 4, 12, 14, and 15 of ’330 patent because each element of the claims, as construed by the Court, is not present in the accused Asetek products.
22. Specifically, the limitation “the inlet defined by the housing opens to an inlet header . . . wherein a region of the inlet header is positioned adjacent a first side of the fins” of independent claim 1, the limitation “the inlet aperture [defined by the housing] opens to an inlet header region positioned adjacent a first side of the plurality of juxtaposed fins” of independent claim 12, and the limitation “the inlet [defined by the housing] opens to an inlet header region juxtaposed with a first side of the plurality of juxtaposed fins” of independent claim 14 are not present in each Generation of Asetek products. The accused Asetek products also do not include the limitation “a second portion of the inlet header extends transversely over the microchannels” of claim 15.
23. Asetek’s Generation 4, 5, 6, and 7 products also do not meet the limitations “an elongate fluid inlet opening overlying and extending transversely relative to the plurality of microchannels . . . wherein the elongate fluid inlet opening defined by the plate extends between a proximal end and a distal end,” “an elongate aperture extending transversely relative to each of the plurality of juxtaposed microchannels,” “the inlet to the microchannels defined by the apertured plate extends between the first side and the second side [of the juxtaposed fins]” of claims 1, 12, and 14, respectively. Additionally, the limitation “the fluid inlet opening is positioned adjacent a central region of the

intended heat generating component contact region” of claim 4 is also not present in the accused Asetek Generation 4, 5, 6, and 7 products.

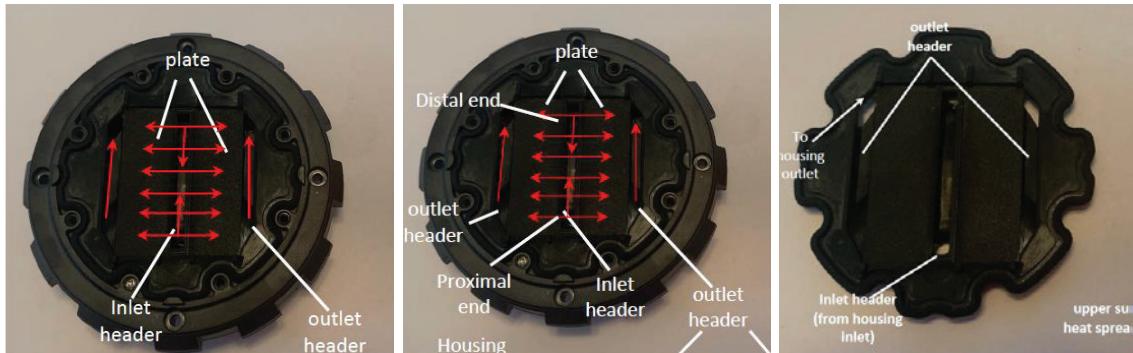
24. Asetek’s Generation 5, 6, and 7 products also do not have the claimed “plate” over the microchannels.

1. The accused Asetek products do not include an “inlet header” region as recited in the asserted ’330 patent claims

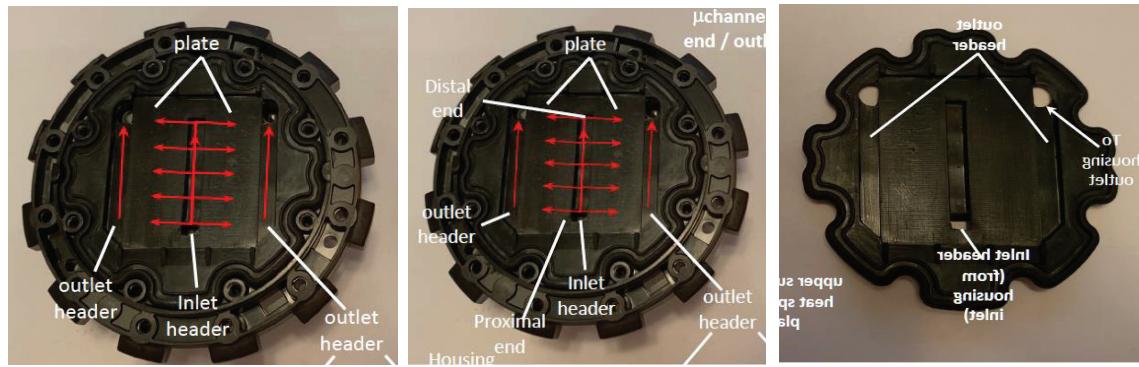
25. Dr. Pokharna’s Infringement Report identifies two separate and distinct portions of the accused Asetek devices — the inlet opening to the microchannels (i.e., the inlet hole/opening in the gasket positioned above the microchannels) and the groove (i.e., the channel in the gasket that extends transversely over the microchannels — as the “inlet header,” as shown below.



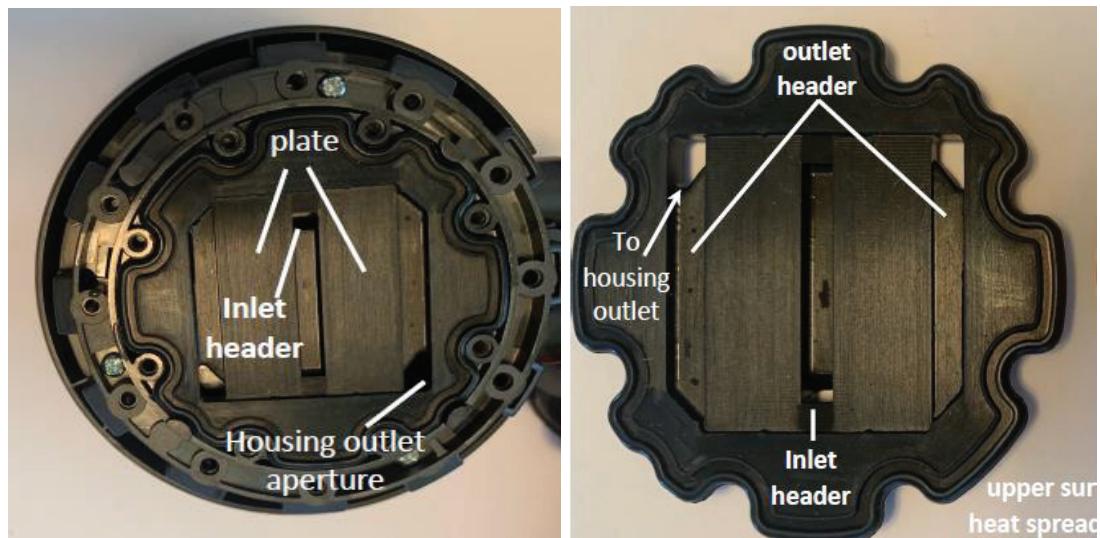
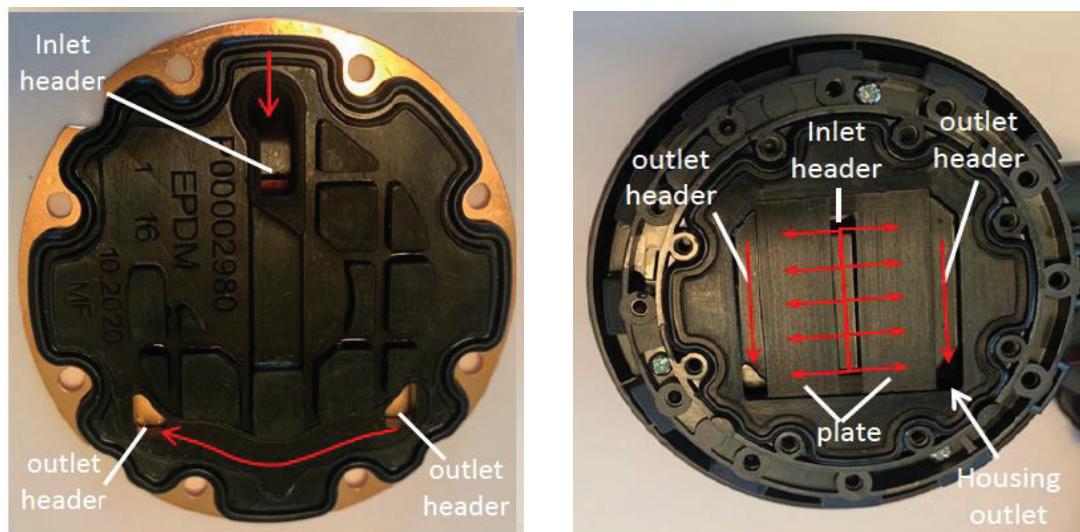
Pokharna Infringement Report, Exhibit A, at 11, 20, 25 (showing alleged “inlet header” of representative Gen 4 product)



Id. at 38, 48, 57 (showing alleged “inlet header” of representative Gen 5 product)

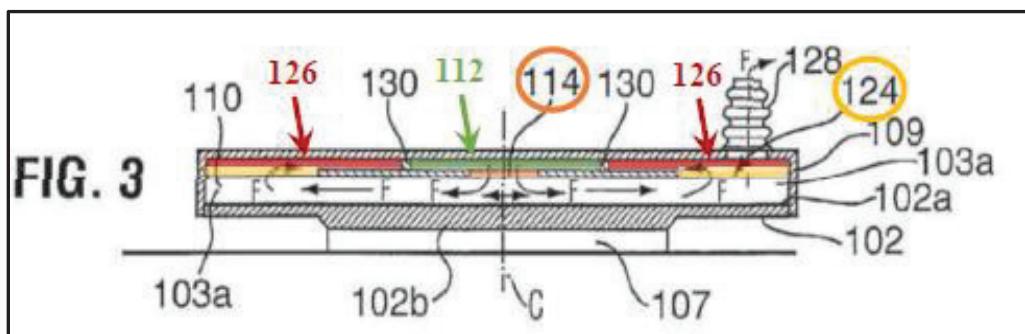


Id. at 69, 78, 87 (showing alleged “inlet header” of representative Gen 6 product)



Id. at 99, 109, 116 (showing alleged “inlet header” of representative Gen 7 product)

26. But the inlet opening to the microchannels, i.e., the opening/hole in the gasket through which cooling liquid flows into the groove and then to the microchannels, cannot be considered an “inlet header” region because the ’330 patent specifically teaches that the inlet header is separate and distinct from inlet opening 114 through which cooling liquid enters the microchannels. *See ’330 patent, 3:66-4:3, 5:1-11.* In CoolIT’s reply claim construction brief (Dkt. 115), CoolIT argued that the volume 112 (shown in green) *above* the inlet 114 (shown in orange) and the plate (shown with crosshatching) in annotated Figure 3, below, is part of the inlet header 112. Dkt. 115 at 11.



Dkt. 115 at 11

27. Specifically, CoolIT argued with reference to the annotated Figure 3 shown above that:

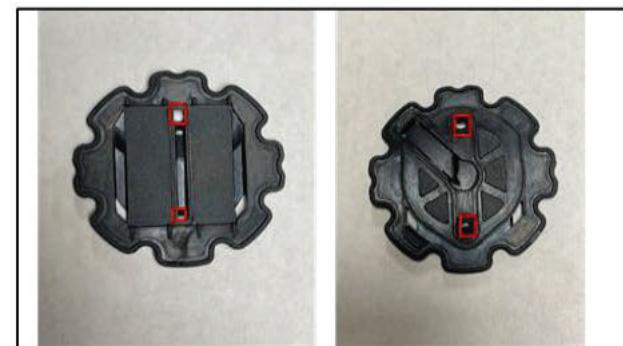
[T]he inlet header 112 (green) is above the plate and the inlet opening 114 (orange), while the outlet header 126 (red) is above the plate and the outlet openings 124 (gold).

Dkt. 115 at 11 (internal citations and quotations omitted). That is, CoolIT explicitly excluded inlet 114 from inlet header 112. *See id.* CoolIT’s expert cannot now argue that the inlet opening to the microchannels is part of the claimed “inlet header” to map the ’330 patent claims to Asetek’s products. That is, the portions indicated in the red squares in the images below cannot be considered a portion of the “inlet header” because these are the opening/aperture/inlet into the microchannels. To a person skilled in the art, these openings/holes are not “headers” because an inlet header creates a constant pressure volume and helps to distribute the flow of liquid into smaller channels, but the opening/aperture/inlet into the microchannels does not perform the function of a header. Rather, a person skilled in the art would understand the portions indicated in the red squares in the images below as simply passages, openings, or gaps in the gasket through

which cooling liquid flows before being distributed into the microchannels. Moreover, the Court construed “inlet header” as “a space out from which the liquid to be distributed flow.” The opening/aperture/inlet into the microchannels (depicted in the red squares below) do not constitute a “space out *from* which” the cooling liquid flow, rather it constitutes a space *through* which the cooling liquid flows.



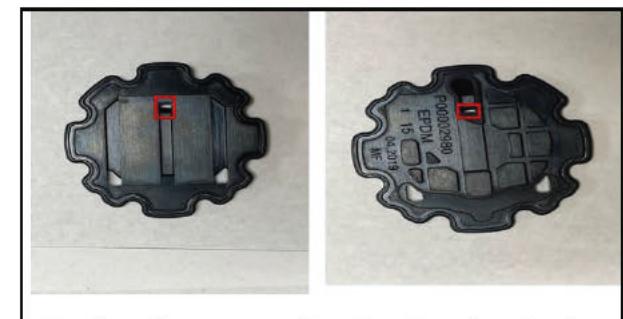
Portion of representative Gen 4 product (red box showing the inlet opening into the microchannels)



Portion of representative Gen 5 product (red box showing the inlet openings into the microchannels)



Portion of representative Gen 6 product (red box showing the inlet opening into the microchannels)



Portion of representative Gen 7 product (red box showing the inlet opening into the microchannels)

28. While the groove in the gasket (into which the cooling liquid from the opening/aperture/inlet flows before entering the microchannels) can help fulfil the function of header, it cannot be the *claimed* “inlet header” because independent claims 1, 12, and 14 respectively recite that “the inlet defined by the housing opens to an inlet header,” that liquid flows from “the inlet aperture of the housing to the inlet header region,” and that “the inlet [of the housing] opens to an inlet header region.” That is, cooling liquid flows from the housing inlet/port 111 *directly* into inlet header 112. *See, e.g.*, Fig. 1 of the ’330 patent, 3:66-4:3 (describing that housing port 111 “open[s]” to inlet header 112). The ’330 patent specification further describes that the cooling liquid

flows from inlet header 112 to inlet 114 and then into the microchannels. *See id.* In the accused Asetek products, however, the groove does not “open” from the inlet defined by housing, rather it “opens” from the opening/inlet/aperture defined by the gasket. That is, in the Asetek products, cooling liquid flows from the housing inlet/port to the opening/inlet/aperture defined by the gasket, then to the groove, and finally into the microchannels. There is no teaching in the ’330 patent of an inlet header region that “opens” from the inlet 114.

29. More specifically, the flow path through the fluid heat exchanger of the ’330 patent is as follows:



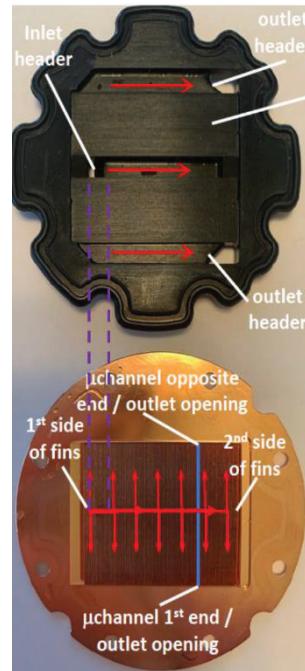
30. In contrast, the flow path through the accused Asetek products is:



31. That is, in the flow path through the fluid heat exchanger of the ’330 patent, the claimed “inlet header” must be positioned *before* the opening/inlet/aperture into the microchannels. In fact, claim 1 specifically recites that “the heat transfer fluid is directed from the inlet opening [defined by the housing] to the inlet header, through the elongate fluid inlet opening defined by the plate and into the microchannels, from the microchannels to the outlet header, and from the outlet header to the outlet defined by the housing.” However, in the flow path defined by the accused Asetek products, the groove is positioned *after* the inlet opening in the gasket, such that cooling liquid flows from the housing inlet port to the inlet opening in the gasket and then to the groove in the gasket. Claims 12 and 14 similarly define the flow path as extending from the housing inlet to the inlet header and then through the inlet/aperture in the plate (not from the housing inlet to the inlet/aperture in the gasket and then to a header region, as in the Asetek devices).

Thus, a person skilled in the art would not consider the groove in the gasket of the accused Asetek products as a portion of the claimed “inlet header.”

32. Moreover, even if the groove is considered an “inlet header” (it should not be under CoolIT’s claims and the specification of the ’330 patent), no portion of the groove is “positioned adjacent a first side of the fins” as required by claim 1, or is “adjacent [or juxtaposed with] a first side of the plurality of juxtaposed fins” as required by claims 12 and 14. For example, as shown below in the annotated images of a representative Gen 7 device from Dr. Pokharna’s Infringement Report, a portion of the gasket and multiple fins — which are solid structures — extend between the groove and a first side of the fins (and the same applies to each of Gen 4, Gen 5, and Gen 6). Therefore, Dr. Pokharna is relying on the opening/inlet/aperture into the microchannels to meet the claim limitations requiring a first side of the fins to be “adjacent” or “juxtaposed with” a region of the inlet header. But, as discussed above, the opening/inlet/aperture into the microchannels is not an “inlet header” region.

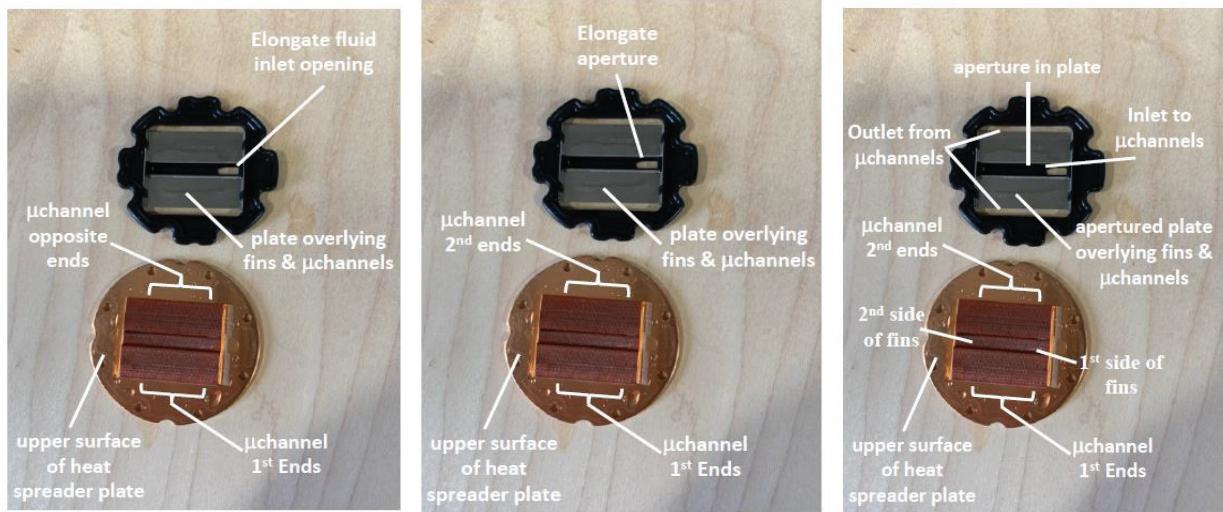


Pokharna Infringement Report, Exhibit A, at 101 (purple annotations added to show intervening solid structures between the groove on the gasket and a first side of the fins)

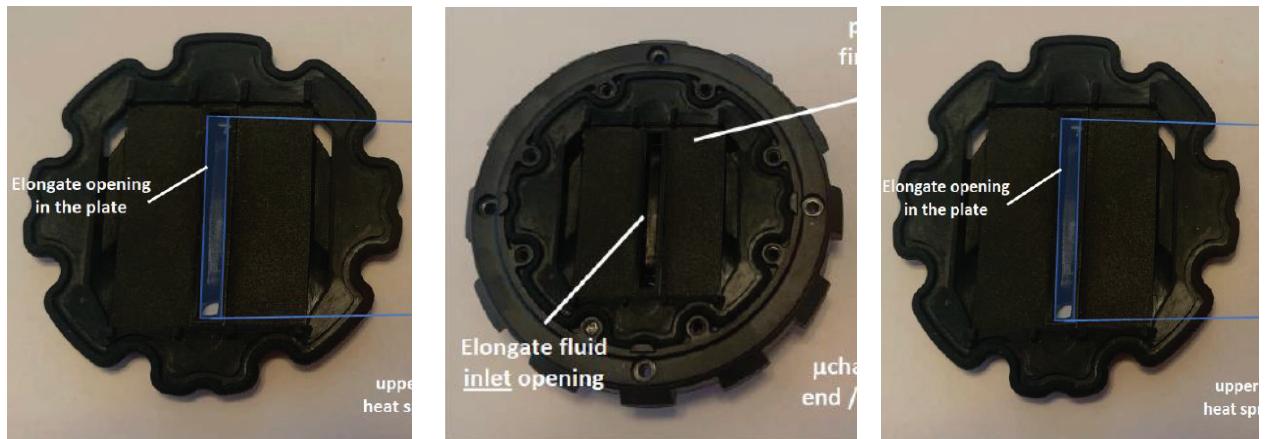
33. In sum, the limitation “the inlet defined by the housing opens to an inlet header . . . wherein a region of the inlet header is positioned adjacent a first side of the fins” of claim 1, the limitation “the inlet aperture [defined by the housing] opens to an inlet header region positioned adjacent a first side of the plurality of juxtaposed fins” of claim 12, and the limitation “the inlet [defined by the housing] opens to an inlet header region juxtaposed with a first side of the plurality of juxtaposed fins” of claim 14 are not present in any of the accused Asetek products because neither the opening/inlet/aperture into the microchannels, nor the groove in the gasket, can be considered the claimed “inlet header” region. That is, none of the accused Asetek products includes an “inlet header” region, or an “inlet header” region that is “adjacent” or “juxtaposed with” a first side of the fins, as required by independent claims 1, 12, and 14.
34. Moreover, since neither the opening/inlet/aperture into the microchannels, nor the groove in the gasket, can be considered an “inlet header” region, the limitation “a second portion of the inlet header extends transversely over the microchannels” of claim 15 is not present in any of the accused Asetek products.

2. The accused Asetek products do not include an opening/aperture/inlet into the microchannels that is defined by the plate and extends over the microchannels between a first side and a second side of the fins

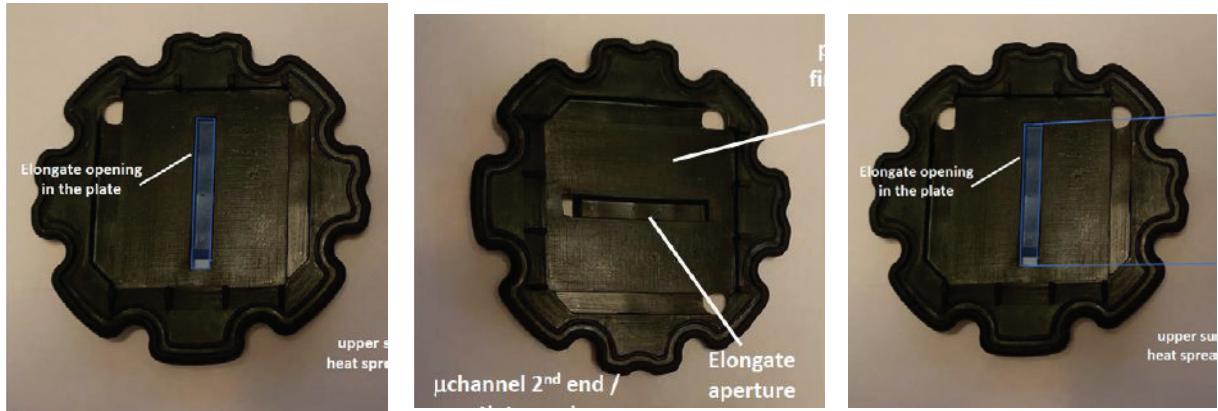
35. Dr. Pokharna argues that the groove in the gasket plus the hole/opening in the gasket (through which cooling liquid enters the groove and then the microchannels) together form the claimed opening/aperture/inlet into the microchannels defined by the plate. But a person skilled in the art would not have understood the groove to be an opening/aperture/inlet. Rather, a person skilled in the art would have considered the groove as a header/manifold for distribution of cooling liquid into the microchannels (although it is not the *claimed* “inlet header” for the reasons discussed above).



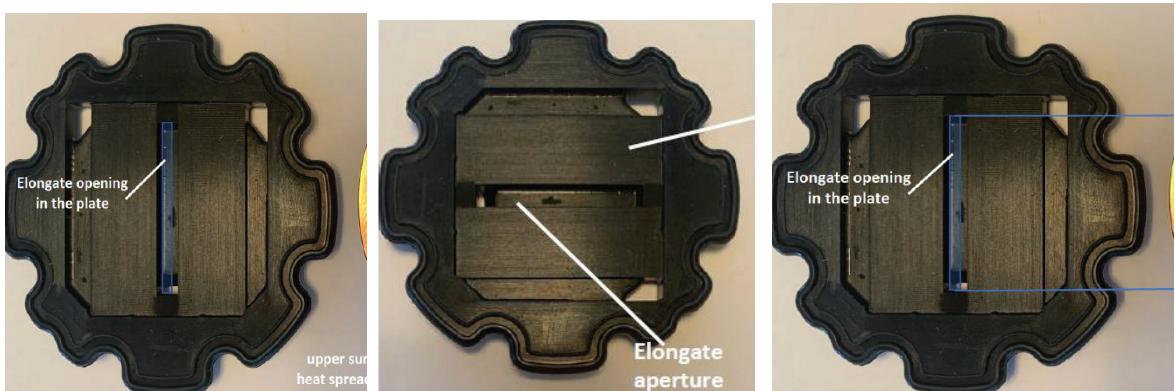
Pokharna Infringement Report, Exhibit A, at 9, 18, 24 (showing alleged “elongate fluid inlet opening,” “elongate aperture,” and “inlet to microchannels” of representative Gen 4 product)



Pokharna Infringement Report, Exhibit A, at 31, 47, 53 (showing alleged “elongate fluid inlet opening,” “elongate aperture,” and “inlet to microchannels” of representative Gen 5 product)



Pokharna Infringement Report, Exhibit A, at 64, 77, 83 (showing alleged “elongate fluid inlet opening,” “elongate aperture,” and “inlet to microchannels” of representative Gen 6 product)



Pokharna Infringement Report, Exhibit A, at 94, 107, 113 (showing alleged “elongate fluid inlet opening,” “elongate aperture,” and “inlet to microchannels” of representative Gen 7 product)

36. My opinion that the groove in the gasket is not an “elongate fluid inlet opening,” “elongate aperture,” and “inlet to microchannels” is supported by the PTAB’s decision regarding Asetek’s US 10,078,354 patent where the PTAB found that the groove in the gasket in each of Asetek’s representative Gen 5, 6 and 7 products is not a “passage” through which cooling liquid flows from the upper/pump chamber to the lower/thermal exchange chamber. IPR2020-00523, Final Written Decision, at 23-24. In fact, during oral arguments for the IPR, Asetek’s counsel argued that CoolIT’s position is that the “groove

area is a passage. It's an opening." *See* IPR2020-00523, Oral Hearing Transcript, at 29:23-33:18. But the PTAB disagreed with that. *See id.* In fact, when CoolIT's counsel was asked to respond to whether the groove is a "passage," he declined to agree that the "groove is a passage" and instead agreed with the PTAB that Asetek's showing was deficient because the hole/opening in the gasket — which CoolIT's counsel implied is the "passage" — is "on the periphery, on the perimeters" and not substantially central to the lower/thermal exchange chamber as required by the '354 patent claims. *Id.* at 34:1-16. Dr. Pokharna's position that the groove is an opening/aperture/inlet is inconsistent with CoolIT's prior position with respect to Asetek's products that the groove is not a "passage." In my opinion, there is a difference between a "passage" and an "opening"/"aperture"/"inlet." While the groove in the gasket is a "passage," it is not an opening, an aperture, or an inlet into the microchannels as defined by CoolIT's patents, as the groove does not extend through the entire thickness of the gasket.

37. Moreover, the groove is defined by the gasket, not a "plate," as required by claims 1, 12, and 14. As discussed below, a person skilled in the art would not consider the gasket as a "plate" because a plate is understood to be a solid, non-compliant structure. In contrast, the gasket in the accused Asetek products is made of a compliant rubber material and does not constitute a "plate" as that term is understood by those of skill in the art. In fact, CoolIT's later patents, e.g., the '567 and '266 patents, specifically distinguish a plate from a compliant manifold (more on this below). This is yet another reason why the groove is not part of the opening/aperture/inlet into the microchannels.

38. The hole/opening in the gasket, depicted by the red boxes below, are the actual opening/aperture/inlet into the microchannels. But the hole/opening in the gasket is not overlying and extending over the "plurality of microchannels" "between a proximal end and a distal end," as required by claim 1. In fact, a person skilled in the art would not consider the hole/opening in the gasket as an "elongate" opening at all; rather, the hole/opening is short compared to the plurality of fins/microchannels. Similarly, a person skilled in the art would not understand the hole/opening in the gasket as an "elongate aperture extending transversely relative to each of the plurality of juxtaposed microchannels," as required by claim 12, or as an "inlet to the microchannels defined by

the apertured plate extend[ing] between the first side and the second side [of the juxtaposed fins]" as required by claim 14. That is, the hole/opening in the gasket alone, i.e., without the groove in the gasket, does not satisfy the limitations of independent claims 1, 12, and 14.



Alleged "plate" of representative Gen 4 product (red box showing the opening/aperture/inlet into the microchannels)



Alleged "plate" of representative Gen 5 product (red box showing the openings/apertures/inlets into the microchannels)



Alleged “plate” of representative Gen 6 product (red box showing the opening/aperture/inlet into the microchannels)



Alleged “plate” of representative Gen 7 product (red box showing the opening/aperture/inlet into the microchannels)

39. It should be noted, moreover, that Dr. Pokharna is mapping the groove in the gasket as both an “inlet header” and as the claimed opening/aperture/inlet into the microchannels. Likewise, Dr. Pokharna is mapping the hole/opening in the gasket as both the claimed “inlet header” and as the claimed opening/aperture/inlet into the microchannels. In my opinion, the hole/opening in the gasket is simply an opening (not a header) through which cooling liquid flows into the groove and then into the microchannels. But it does not meet the limitations “an elongate fluid inlet opening overlying and extending transversely relative to the plurality of microchannels . . . wherein the elongate fluid inlet opening defined by the plate extends between a proximal end and a distal end,” “an elongate aperture extending transversely relative to each of the plurality of juxtaposed microchannels,” “the inlet to the microchannels defined by the apertured plate extends between the first side and the second side [of the juxtaposed fins]” of claims 1, 12, and 14

because it is not elongate and it does not extend over the plurality of microchannels between a first side and a second side of the fins. The groove in the gasket, on the other hand, is not an opening/aperture/inlet into the microchannels; rather, it is simply a header/manifold for distribution of liquid into the channels (but not the *claimed* “inlet header” as discussed above).

40. Additionally, the limitation “the fluid inlet opening is positioned adjacent a central region of the intended heat generating component contact region” of claim 4 is also not present in the accused Asetek Generation 4, 5, 6, and 7 products. This is because the hole/opening in the gasket alone (without the groove in the gasket) is not positioned adjacent a central region of the “heat generating component contact region”; rather the hole/opening is positioned away from a central region of the “heat generating component contact region.”

3. The accused Asetek Gen 5, 6, and 7 products do not include a “plate” positioned over the microchannels

41. Independent claim 1 recites “a plate positioned over the distal ends of the plurality of fins,” independent claim 12 recites “a plate positioned over the juxtaposed fins,” and claim 14 recites “an apertured plate positioned over the microchannels.” Neither of these limitations is present in Asetek’s Generation 5, 6, and 7 products.
42. CoolIT maps the compliant rubber gasket positioned over the fins and microchannels to the claimed “plate.” I disagree that a gasket can be considered a “plate.” In the context of CoolIT’s claimed invention and the specification of the ’330 patent, a person skilled in the art would consider a “plate” to be a flat piece of metal or other rigid material. In contrast, the gasket in Asetek’s products is a compliant (non-rigid) body.⁴ Moreover, a person skilled in the art would not likely refer to a compliant object as a “plate,” rather it would have been likely referred to as a gasket, elastomer, flexible seal, compliant member, compliant body, etc. (but not a plate). Therefore, in my opinion, the gasket in

⁴ CoolIT’s expert, Dr. Pokharna, agrees that the gasket in Asetek’s Gen 5, 6, and 7 products is compliant because he maps the terms “compliant member” and “manifold body defines a pair of compliant surfaces” in the ’567 and ’266 patent claims to the gasket over the microchannels/fins. See, e.g., Pokharna Infringement Report, Ex. C at 16, Ex. D at 19, 41, 64.

Asetek's Gen 5, 6, and 7 products is not a "plate." Rather, it is a compliant manifold body as disclosed and claimed in the '567 and '266 patents.

43. Dr. Pokharna nevertheless maps the gasket in Asetek's Gen 5, 6, and 7 products to both the claimed "plate" (in CoolIT's '330 patent claims, the '284 patent claims, and claims 13 and 15 of the '266 patent) as well as the compliant manifold body disclosed and claimed in the '567 and '266 patents. I disagree with Dr. Pokharna's mapping of the "plate" to the Asetek's rubber gasket positioned over the microchannels and fins. The gasket is not a "plate" as that term would be understood by those skilled in the art.

44. In fact, CoolIT's later patents (e.g., the '567 and '266 patents) make a distinction between a "plate" and compliant member/manifold body over the fins and microchannels. CoolIT's 2007 provisional (U.S. Provisional Application No. 60/954,987 filed on August 9, 2007), to which the '330 patent claims priority to, only described a plate 240 positioned over the fins; there is no disclosure in the 2007 provisional that the "plate" can include a compliant gasket. For example, the 2007 provisional and the '330 patent merely state that "[a] plate 240 may be installed over the walls 210 to close off the channels across the upper limits of walls 210." '330 patent, 6:65-66; 2007 provisional at 7. It was not until the 2011 provisional (U.S. Provisional Application No. 61/512,379 filed on July 27, 2011) that CoolIT first described a "compliant insert 334" having "a pair of generally conformable, flat surfaces 367." 2011 Provisional at 25, 29. CoolIT contrasted this "compliant insert 334" in the 2011 provisional to the earlier-disclosed "plate 240." *Id.* at 25-26. CoolIT explained that unlike the surfaces of plate 240, the conformable surfaces 367 of the compliant insert can "conform[] to variations in height among the plurality of fins," and thereby "can reduce or eliminate the need for secondary machining operations used to make the respective distal ends of the fins generally coplanar and compatible with, for example, the plate 240." *Id.* at 25-26 (emphasis added); *see also id.* at 29.

45. More specifically, CoolIT's 2011 provisional, which introduces a compliant manifold body (i.e., compliant insert 334) for the first time, discloses the following:

In a working embodiment, the [manifold] body 360 is formed of a compliant polymeric material that generally conforms to and seals

against adjacent surfaces. Any suitable material can be used to form the insert body 360, provided that the selected material is compatible with other components of the subassembly 300 and the selected working fluid.

Id. at 26.

Several pages later, the 2011 Provisional describes the benefits of compliant insert 334:

By incorporating the compliant insert 334, secondary machining operations that would tend to dull the sharp apices 405 can be eliminated to reduce heat losses in the coolant, while still reducing or eliminating leakage between adjacent microchannels that might otherwise occur from using “raw” fins due to gaps that would be formed between the fins and, e.g., a generally planar plate 240.

46. In the '266 patent, CoolIT again distinguished the earlier-disclosed rigid plate 240 from the new compliant insert 334. The language in the '266 patent is nearly identical to that in the 2011 provisional except that it explicitly described the plate over the microchannels as “rigid,” as shown by the relevant language underlined in the passages below:

“The conformable surfaces 367 can reduce or eliminate the need for secondary machining operations used to make the respective distal ends of the fins generally coplanar and compatible with, for example, the a rigid plate 240.”

Compare '266 patent, 15:60-63 with 2011 Provisional, 26:2-5.

47. Accordingly, CoolIT itself distinguishes a “plate” from a compliant member/manifold body. CoolIT cannot now argue that the claimed “plate” covers the compliant gasket used in Asetek’s Gen 5, 6, and 7 products. There is no written description support in the '330 patent to construe “plate” broadly to include both a rigid plate and a compliant manifold body.
48. It is my understanding that in IPR2020-00825 against the '266 patent, CoolIT has argued that because the tabs 242 on plate 240 of the 2007 provisional/'330 patent are bendable, the plate 240 is made of a compliant material. I disagree. First, the 2007 provisional/'330 patent does not state that tabs 242 and plate 240 are made from the same material. While they could be made of the same material, they are not necessarily made of the same

material. Thus, the bendability of tabs 242 does not provide any inherent disclosure that plate 240 can be a compliant body.

49. Second, CoolIT appears to take the position in IPR2020-00825 that almost any material that can bend or otherwise deform under application of force is a compliant material, regardless of the amount of force needed to bend/deform the material. That is not correct because bendability and compliancy are not the same thing. Even a stiff (rigid) material, e.g., an aluminum or steel plate, will bend upon application of sufficient force. Therefore, bendability of a material does not say anything about the compliancy of the material. In fact, “[c]ompliant (flexible) materials, by definition, have a low elastic modulus, and only minor stress is required for a considerable strain.” *Vegas*⁵ at 923, 924. Whereas “[s]tiff materials, by definition, have a high modulus of elasticity”⁶ (i.e., considerable stress is needed for a minor deformation).” *Id.* That is, a stiff material “does not deform much when a stress is applied.” *Id.*; *Ashby*⁷ at 3:34 (“Under a given stress, a stiff material (e.g., aluminum) strains only slightly; a floppy or compliant material (e.g., polyethylene) strains much more.”). Accordingly, “stiffness (rigidity) of an object” represents “the property of being inflexible and hard to distort,” whereas a compliant material is “flexible and easy to distort.” *Vegas* at 923, 924 (emphases added). Thus, contrary to CoolIT’s position, not all materials that are bendable/deformable are compliant because even a material that is stiff (rigid) — which is the inverse of compliant — will bend/deform under sufficient stress. *Id.* And as mentioned previously, in normal engineering parlance, “plate” is not a term that is used to refer to compliant objects.

50. Third, the bendable tabs 242 would teach a person skilled in the art that tabs 242 and plate 240 are made of a stiff material (assuming they are made of the same material)

⁵ Manuel R. Vegas & Jose L. Martin del Yerro, *Stiffness, Compliance, Resilience, and Creep Deformation: Understanding Implant-Soft Tissue Dynamics in the Augmented Breast: Fundamentals Based on Materials Science*, AESTH PLAST SURG 37:922-930 (2013).

⁶ “‘Young’s modulus of elasticity,’ ‘elastic modulus,’ or ‘modulus of elasticity’” is “the mathematical description of the stiffness of a material (i.e., its resistance to being deformed when a force is applied to it)” and “the ratio between stress and strain.” *Vegas* at 923.

⁷ Michael F. Ashby & David R. H. Jones, *Engineering Materials 1: An Introduction to Properties, Applications, and Design*, Ch. 3:29-53, Ch. 8:115-133 (4th ed. 2012).

rather than a compliant material. This is because the 2007 provisional discloses that the tabs are bent permanently over the outermost microchannel walls during the manufacturing assembly process. *See* 2007 provisional at 14. A stiff material (e.g., steel, aluminum) will tend to undergo plastic (permanent) deformation due to its high modulus of elasticity, which means it will tend to maintain its bent shape when the applied force (stress) is released. In contrast, a compliant material (e.g., rubber, elastomer) will tend to undergo elastic (nonpermanent) deformation due to its low modulus of elasticity, which means it will tend to return to its original (e.g., unbent) shape when the applied stress is released. Therefore, the permanently bent tabs 242 would have indicated to a skilled artisan that the tabs (and by extension plate 240) are stiff, rather than compliant, so that tabs 242 would retain their bent shapes during the assembly process.

51. At bottom, neither the 2007 provisional nor the '330 patent provides any disclosure of a compliant manifold body, e.g., the gasket in Asetek's Gen 5, 6, and 7 products. Nor does the 2007 provisional/'330 patent provide any disclosure that the inventor considered any of the material properties of plate 240 (e.g., compliancy, bendability, hardness, resilience, etc.) to be an aspect of the invention. Rather, a compliant insert 334 was disclosed for the first time in the 2011 provisional.
52. In fact, in the IPR filed by Asetek against CoolIT's '266 patent, the Patent Trial and Appeal Board (PTAB) agreed with Asetek that "the 2007 Provisional does not contain a disclosure that would have conveyed to a POSITA that the inventor had possession of a 'manifold body defin[ing] a pair of compliant surfaces[.]'" IPR2020-00825, Final Written Decision, at 23. The PTAB also found that the "inventor's substitution of the phrase rigid plate' for the phrase 'plate 240' [in the '266 patent] is objective, intrinsic evidence that as of 2012, the inventor considered plate 240 (which he was contrasting with compliant insert 334) to be made of a rigid, rather than compliant, material." *Id.* at 26. As the PTAB found, the term "plate" in the '330 patent claims (as well as the '284 patent claims, and claims 13 and 15 of the '266 patent) cannot be construed to include both a rigid plate as well as a compliant gasket/manifold (as in Asetek's Gen 5, 6, and 7 products) because there is no written description support for a compliant manifold body in the 2007 provisional or the '330 patent.

53. Because the claim term “plate” means a rigid (non-compliant) structure unlike the gasket in Asetek’s Gen 5, 6, and 7 products, the accused Asetek Gen 5, 6, and 7 products do not include the limitations “a plate positioned over the distal ends of the plurality of fins,” “a plate positioned over the juxtaposed fins,” and “an apertured plate positioned over the microchannels” of independent claims 1, 12, and 14. Accordingly, Asetek’s Gen 5, 6, and 7 products do not infringe the asserted claims of the ’330 patent.

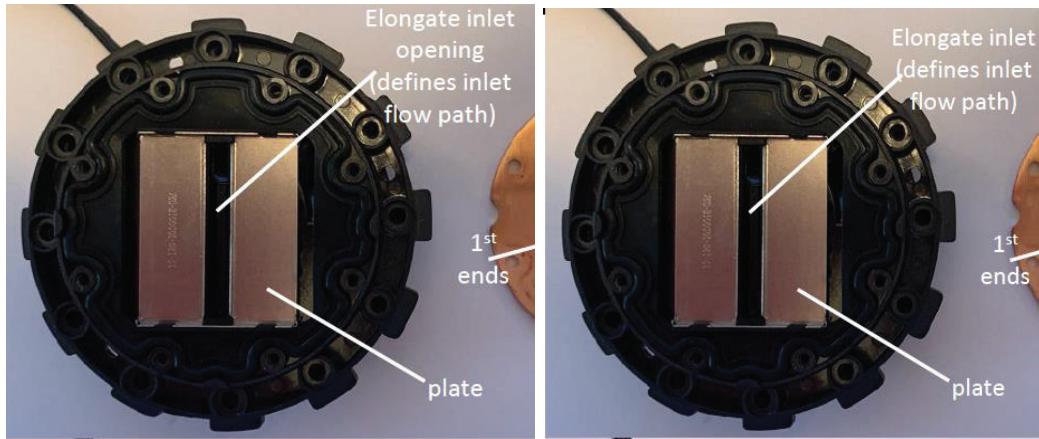
B. The asserted claims of the ’284 patent are not infringed by the accused Asetek products

54. As described in detail below, the accused Gen 4-7 Asetek products do not literally infringe the asserted claims 1, 3, 5, 15, and 20 of ’284 patent because each element of the claims, as construed by the Court, is not present in the accused Asetek products.

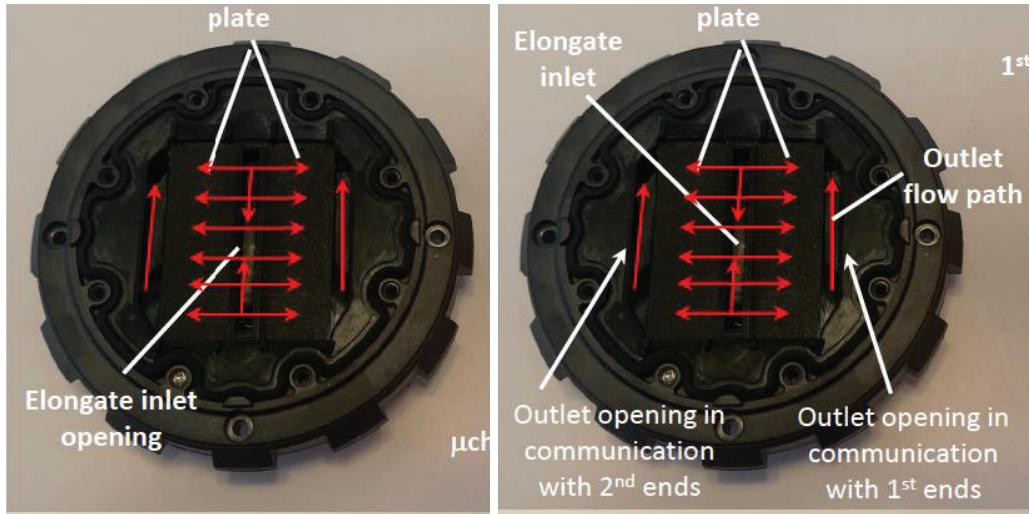
55. Specifically, the limitation “an elongate inlet opening in fluid communication with each of the microchannels” in independent claim 1 and the limitation “an elongate inlet opening to the microchannels” in independent claim 15 are not present in each Generation of Asetek products. Moreover, Asetek’s Generation 5, 6, and 7 products do not include a “plate positioned over the plurality of walls” as required by claims 1 and 15.

1. Asetek’s Generation 4, 5, 6, and 7 products do not include “an elongate inlet” as required by the asserted independent claims 1 and 15

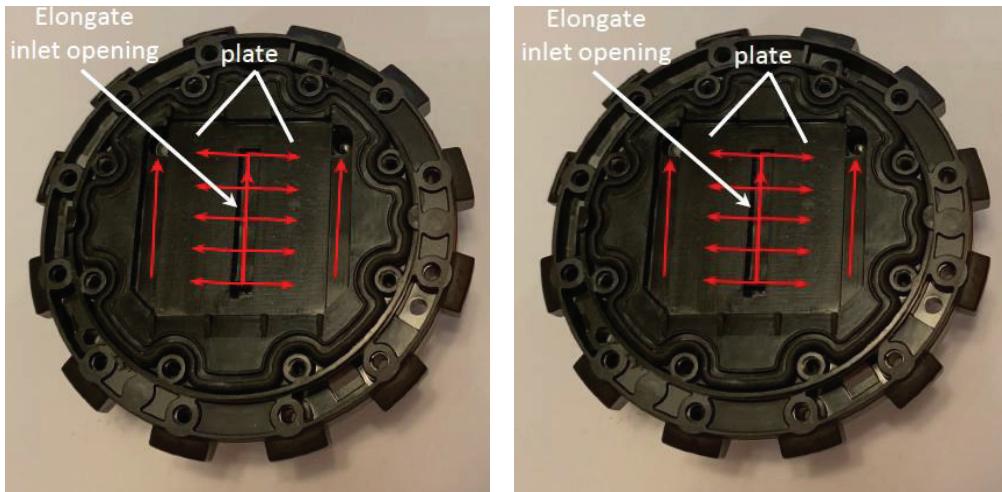
56. For each of the Asetek Gen 4, 5, 6 and 7 products, Dr. Pokharna points to the groove in the gasket/plate as an “elongate inlet opening.” But as discussed above with respect to the ’330 patent, the groove in the gasket is not an “elongate inlet opening.” I am incorporating by reference here my discussion in ¶36 of this Report.



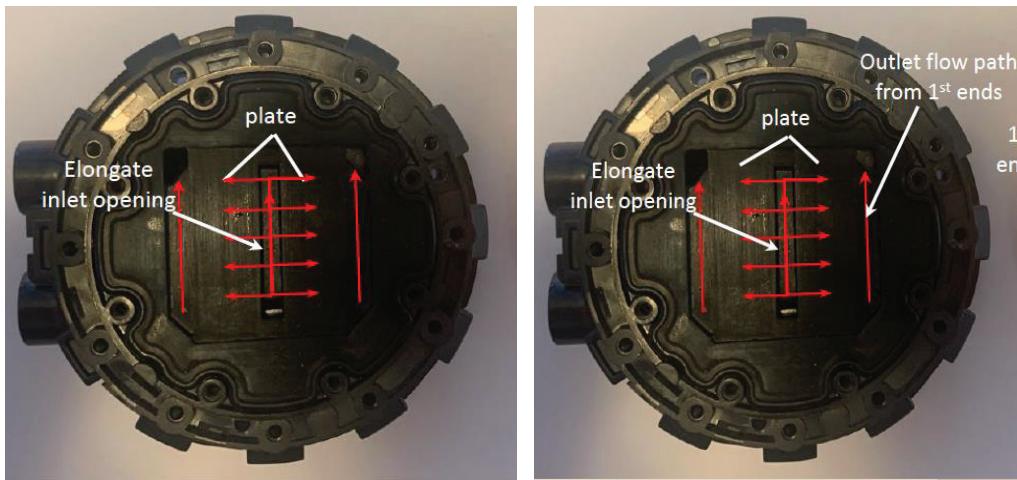
Pokharna Infringement Report, Exhibit B, at 6, 19 (showing alleged “elongate inlet opening” of representative Gen 4 product)



Pokharna Infringement Report, Exhibit B, at 29, 41 (showing alleged “elongate inlet opening” of representative Gen 5 product)



Pokharna Infringement Report, Exhibit B, at 51, 64 (showing alleged “elongate inlet opening” of representative Gen 6 product)



Pokharna Infringement Report, Exhibit B, at 74, 87 (showing alleged “elongate inlet opening” of representative Gen 7 product)

57. The opening/hole in the gasket, depicted by the red boxes below, is the actual inlet into the microchannels. But the opening/hole in the gasket is not “elongate,” as required by claims 1 and 15. Nor does it open to, or is in direct fluid communication with each of the microchannels. Rather, the opening/hole is short (relative to the plurality of microchannels) and extends over only a few of the fins/microchannels. That is, the opening/hole by itself, i.e., without the groove in the gasket, does not satisfy the limitations of independent claims 1 and 15.



Alleged “plate” of representative Gen 4 product (red box showing the inlet into the microchannels)



Alleged “plate” of representative Gen 5 product (red box showing the inlets into the microchannels)



Alleged “plate” of representative Gen 6 product (red box showing the inlet into the microchannels)



Alleged “plate” of representative Gen 7 product
(red box showing the inlet into the microchannels)

58. In sum, the limitation “an elongate inlet opening in fluid communication with each of the microchannels” in independent claim 1 and the limitation “an elongate inlet opening to the microchannels” in independent claim 15 are not present in each Generation of Asetek products. Therefore, the claims 1, 3, 5, 15 and 20 of the ’284 patent are not literally infringed by the accused Asetek products. Additionally, the limitation “plate positioned over the plurality of walls” is not present in the accused Generation 5, 6, and 7 products. This is an independent reason why claims 1, 3, 5, 15 and 20 of the ’284 patent are not infringed by the accused Generation 5, 6, and 7 products.

2. Asetek’s Generation 5, 6, and 7 products do not include a “plate positioned over the plurality of walls” as required by the asserted independent claims 1 and 15

59. As discussed above with respect to the ’330 claims, the limitation “plate positioned over the plurality of walls” in the asserted ’284 patent claims cannot be equated to the gasket over the microchannels in Asetek’s Generation 5, 6, and 7 products. This is because the “plate” disclosed and claimed in the ’284 patent cannot be interpreted broadly to include both a rigid plate (i.e., the plate 240 disclosed in the ’284 patent) and a compliant manifold body because there is no written description support for a compliant manifold body in the ’284 patent (or the ’330 patent/2007 provisional to which the ’284 patent claims priority).

60. I incorporate by reference here my discussion in ¶¶ 41-53 of this Report, which applies equally to the '284 patent claims and disclosure.
61. In short, a skilled artisan will understand the “plate positioned over the plurality of walls” to be a rigid plate in view of the '284 patent’s disclosure and how the term “plate” is generally used in the relevant field of art. The gasket in Asetek’s Gen 5, 6, and 7 products is not a rigid plate, rather it is a compliant manifold body as disclosed and claimed in the '567 and '266 patents. Therefore, the rubber gasket in Asetek’s Gen 5, 6, and 7 products is not the claimed “plate” as that term would be understood by those skilled in the art. Accordingly, Asetek’s Gen 5, 6, and 7 products do not infringe the asserted claims of the '284 patent because the claim limitation “plate positioned over the plurality of walls” is not present in any of those accused products.

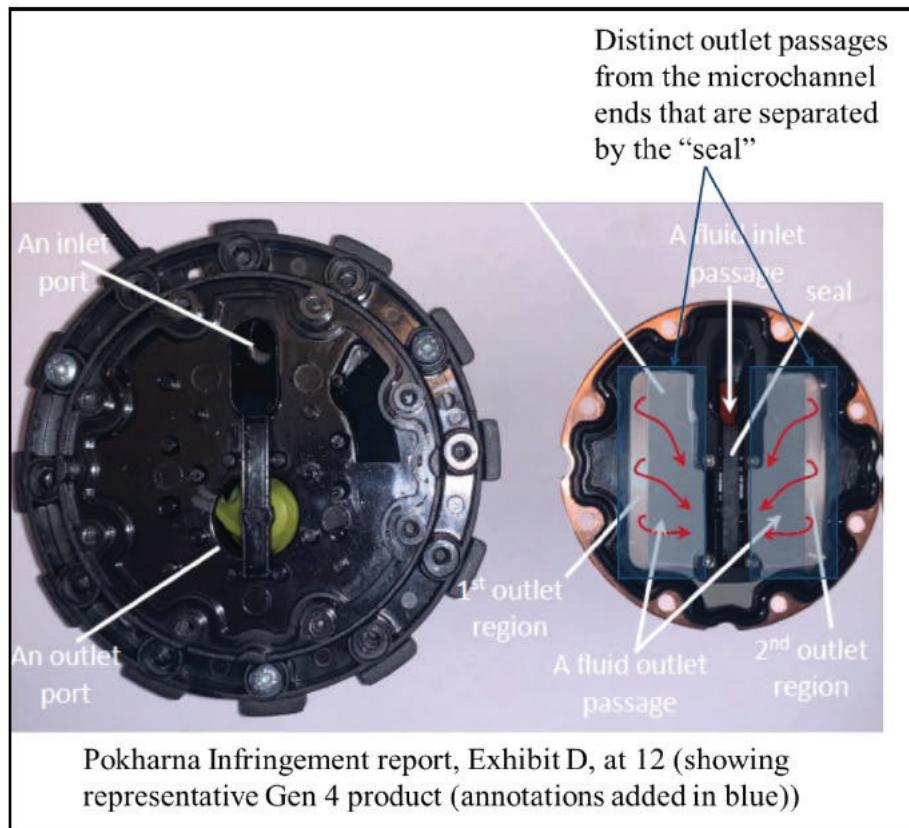
C. The asserted claims 13 and 15 of the '266 patent are not infringed by the accused Asetek products

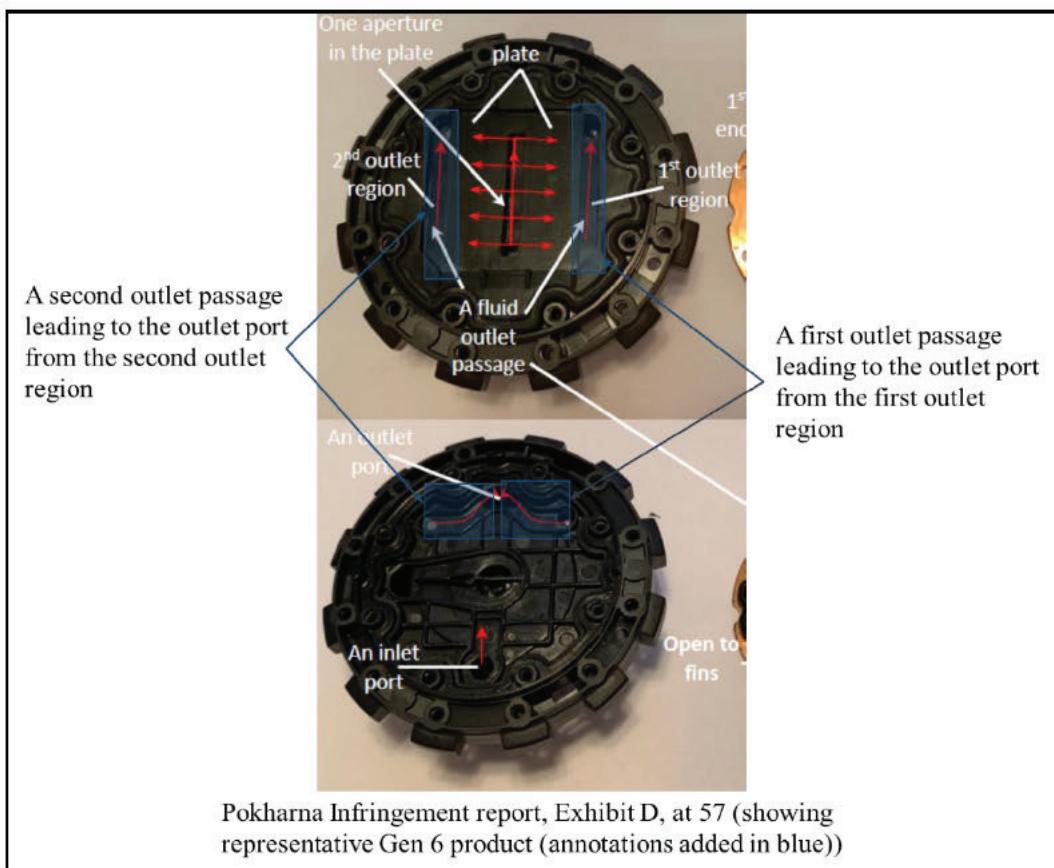
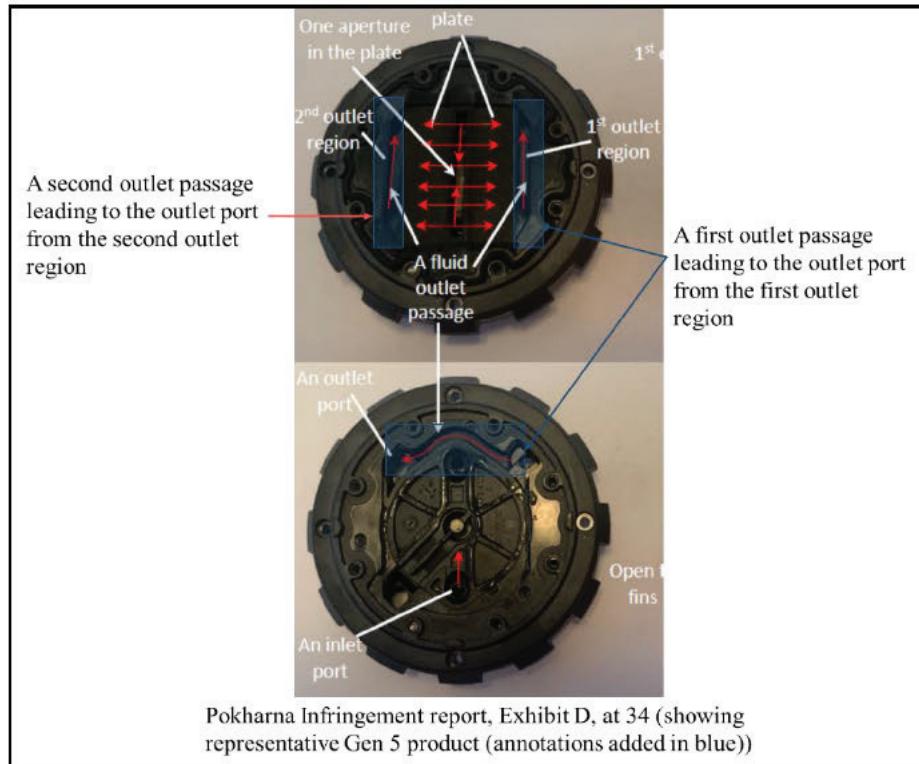
62. The accused Asetek Generation 4, 5, 6 and 7 products do not include the limitation “the two sub flows recombine in the outlet passage” of independent claim 13, and Asetek Generation 5, 6 and 7 products additionally do not include the limitation “a plate overlying the walls” of independent claim 13. Therefore, Asetek’s Generation 4, 5, 6 and 7 products do not infringe claim 13 and claim 15 (which depends from claim 13).
63. Moreover, Asetek Generation 4, 5, 6 and 7 products do not include the limitation “the outlet opening from the centrally located microchannel is larger than the outlet opening from at least one of the larger microchannels” of dependent claim 15. This is an independent reason why the Generation 4, 5, 6 and 7 products do not infringe claim 15.

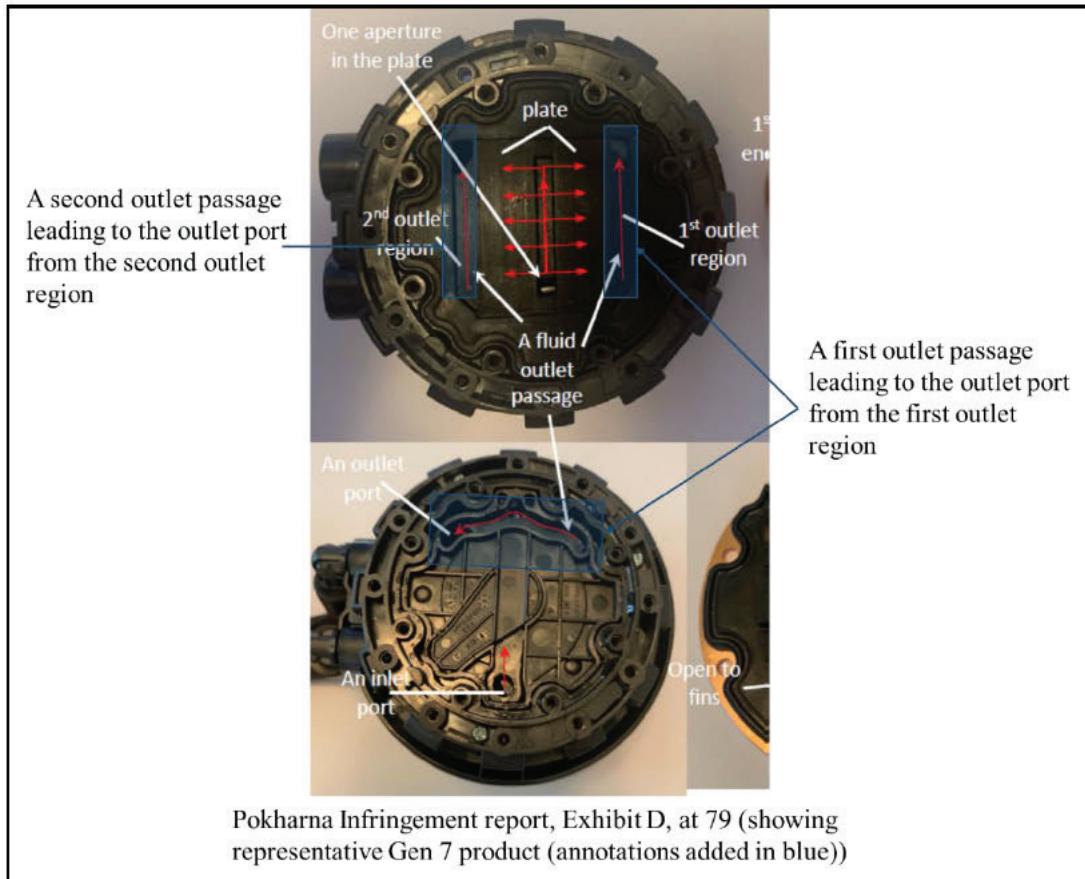
1. Asetek’s Generation 4, 5, 6 and 7 products do not include the limitation “the two sub flows recombine in the outlet passage” of independent claim 13

64. Independent claim 13 recites that cooling liquid splits into two sub-flows in each microchannel, the sub-flows exit adjacent the microchannel first and second ends, and “the two sub flows recombine in the outlet passage.” Asetek’s Generation 4, 5, 6, and 7 products have two separate, non-overlapping outlet passages, as shown below, and each

outlet passage receives one of the two sub-flows from each microchannel. However, the two sub-flows do not recombine in a single outlet passage. Dr. Pokharna's own mappings in Exhibit D of his Infringement Report show that cooling liquid does not recombine in an outlet passage, rather each sub-flow proceeds in two separate and distinct flow paths to the outlet port. Dr. Pokharna does not indicate the outlet port and/or the passageway leading out of the fluid heat exchanger housing (to the pump or radiator) as part of the outlet passage. Therefore, under Dr. Pokharna's own mappings, Asetek's Generation 4, 5, 6 and 7 products do not meet the limitation "the two sub flows recombine in the outlet passage."







65. As shown above, each of Asetek's Generation 4, 5, 6, and 7 products has two distinct "fluid outlet passages" per Dr. Pokharna's mapping, instead of "a fluid outlet passage" as required by claim 13. In each generation of Asetek product, the gasket/"seal" separates the flow paths of cooling liquid from the first and second "outlet regions" to the outlet port, such that there is no recombination/mixing of the cooling liquid received by the first and second "outlet regions." In particular, in Asetek's Generation 5 and 7 products, cooling liquid received by the "second outlet region" flows directly to the outlet port, and cooling liquid received by the "first outlet region" takes a separate, longer path to the outlet port. Therefore, the two sub flows do not recombine, nor is there a single outlet passage (per Dr. Pokharna's mapping), in which the two sub-flows recombine before reaching the outlet port. Therefore, under Dr. Pokharna's mappings, Asetek's Generation 4, 5, 6 and 7 products do not meet the limitation "the two sub flows recombine in the outlet passage," and thus does not infringe claims 13 and 15.

2. Asetek's Generation 5, 6 and 7 products do not include the limitation "a plate overlying the walls" of independent claim 13

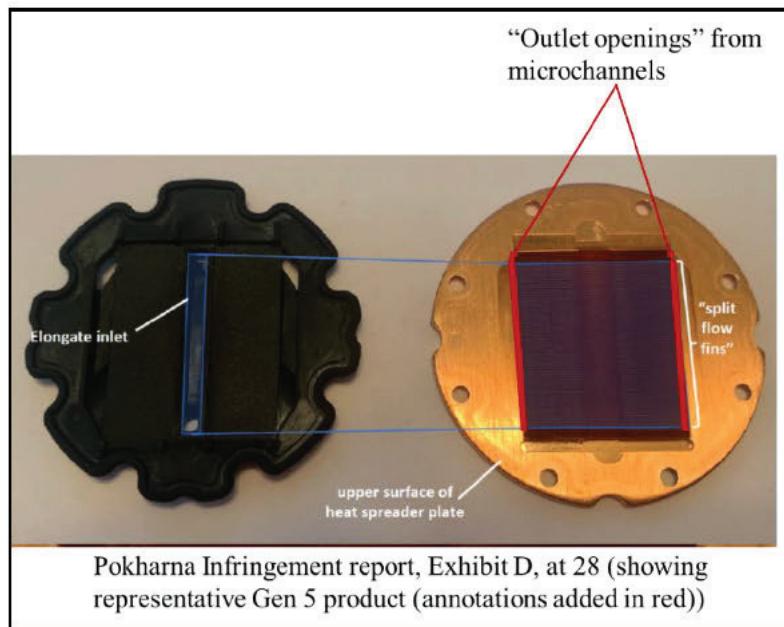
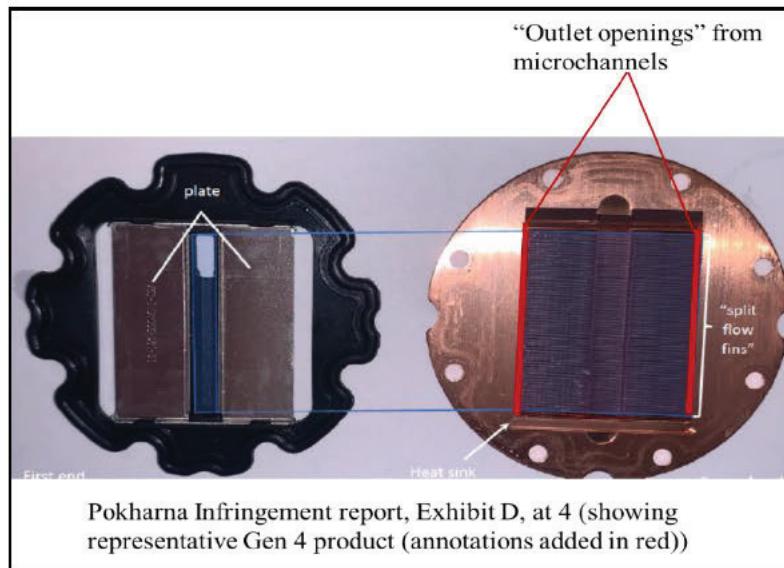
66. As discussed with respect to the claims of the '330 and '284 patents, the limitation "a plate overlying the walls" of claim 13 cannot be equated to the rubber gasket over the microchannels in Asetek's Generation 5, 6, and 7 products. This is because the "plate" disclosed and claimed in the '266 patent cannot be interpreted broadly to include both a rigid plate (i.e., plate 240) and a compliant manifold body (i.e., insert 334). A person skilled in the art would not use the term "plate" to mean a compliant gasket as in Asetek's Generation 5, 6, and 7 products; rather a person skilled in the art would understand and use the term "plate" to mean a rigid structure such as plate 240. Indeed, CoolIT itself distinguishes between a "plate" and a compliant gasket by claiming a "manifold body [over the fins] defines a pair of compliant surfaces" in claims 1-12 and a "plate overlying the walls" in claims 13 and 15. The specification of the '266 patent also draws a clear distinction between compliant insert 334 and rigid plate 240. *See '266 patent, 15:48-16:12.* If "plate" could be interpreted broadly to include both a rigid plate and a compliant gasket (as in Asetek's Gen 5, 6, and 7 products), CoolIT would not have used different terminologies — "manifold body" as opposed to "plate" — in independent claims 1 and 13, respectively.
67. I incorporate by reference here my discussion in ¶¶ 41-53, above, which applies equally to claims 13 and 15 of the '266 patent.
68. In short, a skilled artisan would understand the "plate overlying the walls" to be a rigid plate in view of the '266 patent's disclosure and how the term "plate" is generally used in the relevant field of art. The gasket in Asetek's Gen 5, 6, and 7 products is not a rigid plate, rather it is a compliant manifold body, such as "insert 334." Therefore, the gasket in Asetek's Gen 5, 6, and 7 products is not the claimed "plate" in claims 13 and 15. Accordingly, Asetek's Gen 5, 6, and 7 products do not infringe the asserted claims 13 and 15 of the '266 patent because the claim limitation "plate overlying the walls" is not present in any of those accused products.

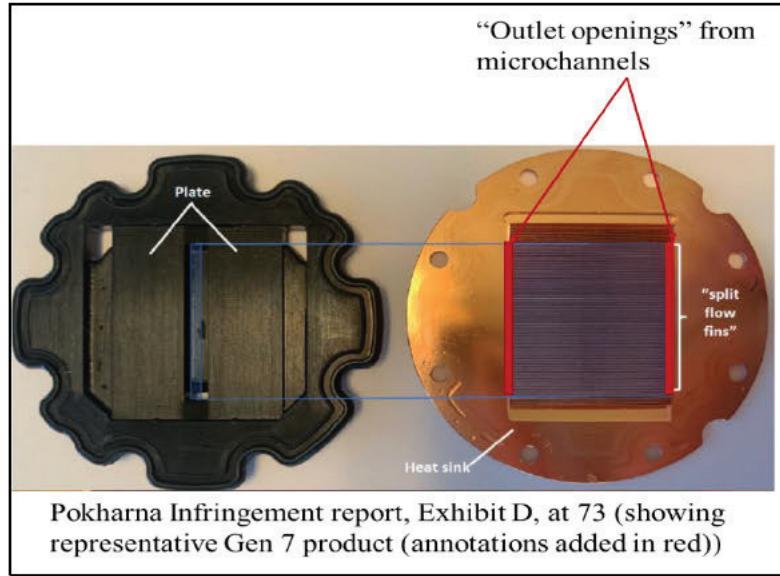
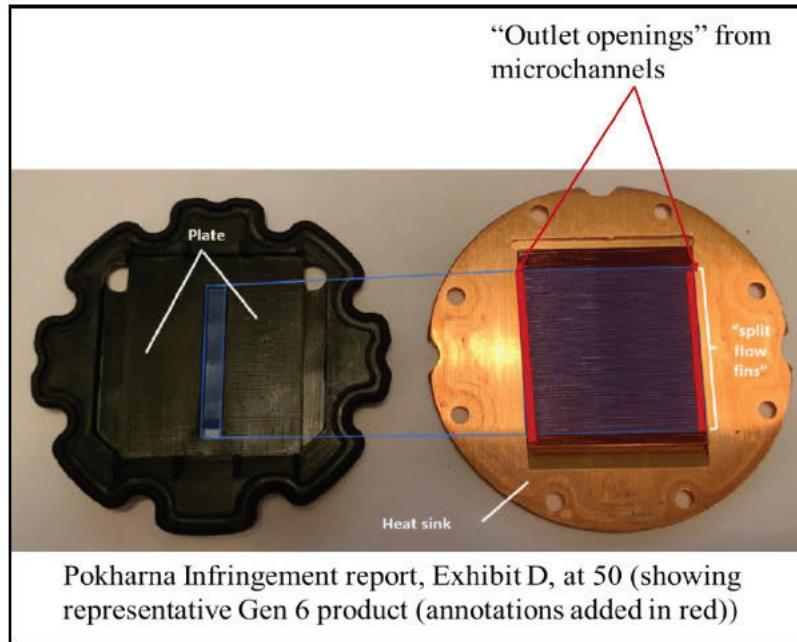
69. I understand that CoolIT has not made this argument, but if CoolIT argues that the term “plate” encompasses both rigid plate 240 and compliant insert 334 (which I do not agree with for the reasons explained above), then the earliest priority date of claims 13 and 15 would be July 27, 2011 when Provisional Appl. No. 61/512,379, which first disclosed compliant insert 334, was filed. In that case, additional prior art references, such as Bezama (U.S. Patent Publication No. 2010/0012294), the Koolance device, and CoolIT’s own prior patent publication (U.S. Patent Publication No. 2009/0071625, published Mar. 19, 2009, to Lyon (“Lyon”)) becomes prior art to claims 13 and 15. Therefore, if CoolIT argues that the term “plate” encompasses both rigid plate 240 and compliant insert 334, I reserve the right to supplement my Invalidity Report to show how claims 13 and 15 of the ’266 patent are invalidated at least by Lyon, Bezama, and Koolance, alone or in combination. As an example, I have shown in Exhibit B how Lyon anticipates claims 13 and 15 if the priority date of those claims is July 2011. I am also incorporating by reference here my discussion of the Koolance device in pages 66-68 and Bezama in pages 69-72 of my Initial Invalidity Report served on September 16, 2021.

3. Asetek’s Generation 4, 5, 6 and 7 products do not include the limitation “the outlet opening from the centrally located microchannel is larger than the outlet opening from at least one of the outer microchannels” of dependent claim 15

70. Dr. Pokharna maps the entire “first outlet region” to the “outlet opening[s]” from the microchannels. *See* Pokharna Infringement Report, Ex. D at 13, 35, 58, 80. For the ’284 patent, Dr. Pokharna again maps the same “outlet region” portion of the device to the claimed “outlet flow path.” *Compare id.* with Pokharna Infringement Report, Ex. B at 10, 23, 32, 45, 55, 68, 78, 91. But “outlet opening” and “outlet flow path” cannot mean the same feature of the accused devices because different claim terms must have different meanings.
71. I disagree that the “outlet opening” is the same as the “first/second outlet region” or the “outlet flow path” in the accused Asetek devices. In fact, if “outlet region” was the same as the claimed “outlet opening,” then there would be no difference in scope and meaning between claims 14 and 15 of the ’266 patent. Contrary to Dr. Pokharna’s opinion, the claimed “outlet opening” is just the area where the plate (Gen 4) or gasket (Gen 5, 6, 7)

over the microchannels ends and liquid exits the microchannels; the region where liquid flows into *after* exiting the microchannel (i.e., the claimed “outlet region”) is not part of the “outlet opening.” In the case of the accused Asetek devices, the “outlet opening” is at the end of the microchannel, as shown below. That is, the “outlet opening” from each microchannel is the area at the end of microchannel where liquid exits the microchannel.





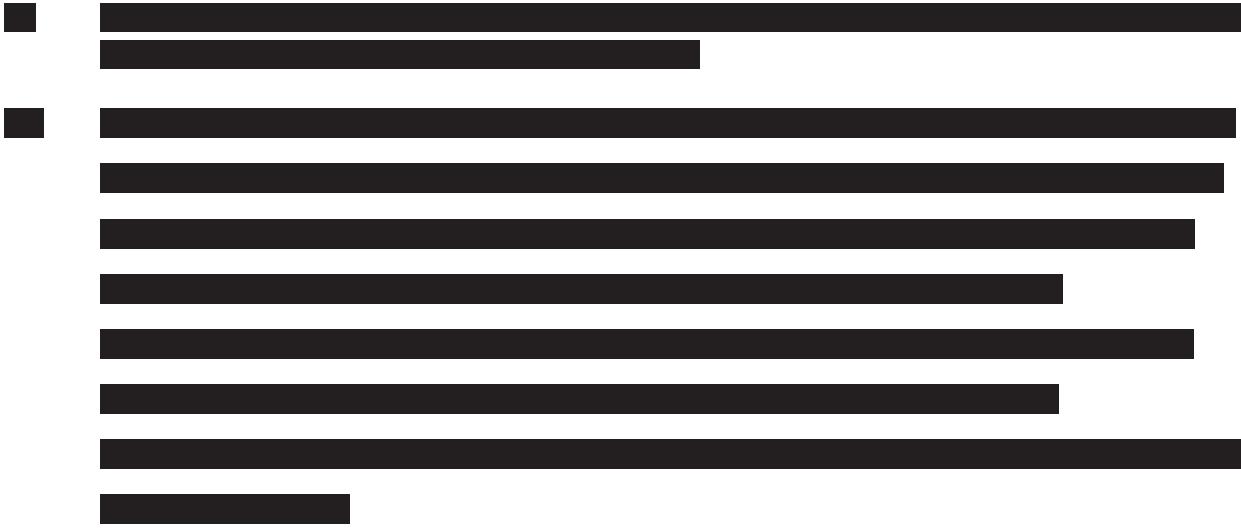
72. My opinion about the “outlet opening” is supported by the testimony of the inventor of the ’266 patent, Mr. Geoff Lyon. Mr. Lyon testified that the “outlet opening is defined by the exit from the microchannel” and that he would not consider the “area that the fluid flows into after exiting the microchannel as part of the outlet opening from the microchannel[]” because the “opening itself is the exit from the channel.” Lyon Dep. Tr. at 121:5-122:2. In the context of Figure 2 of the ’266 patent, Mr. Lyon defined “the outlet opening within the outlet region as the area above the microchannels where liquid exits

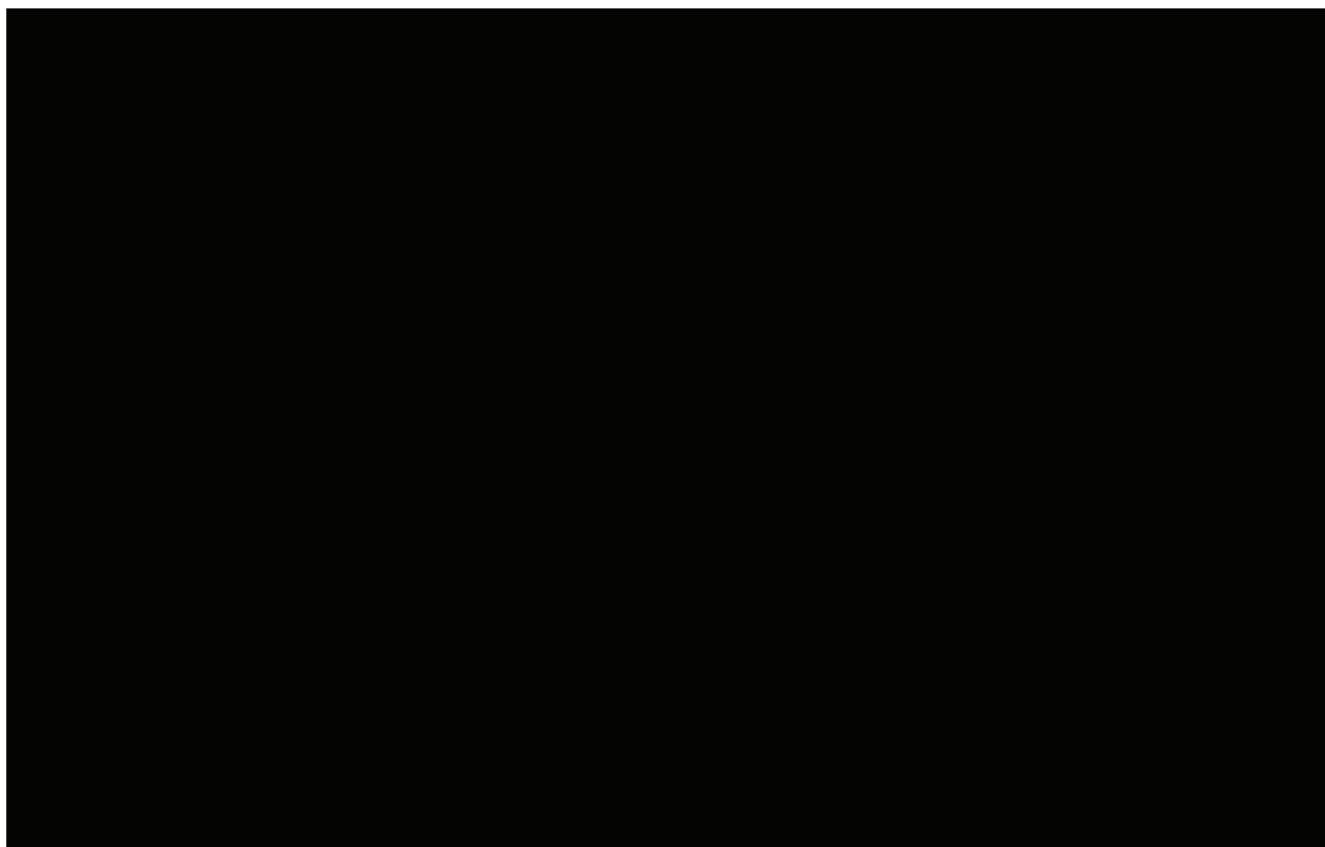
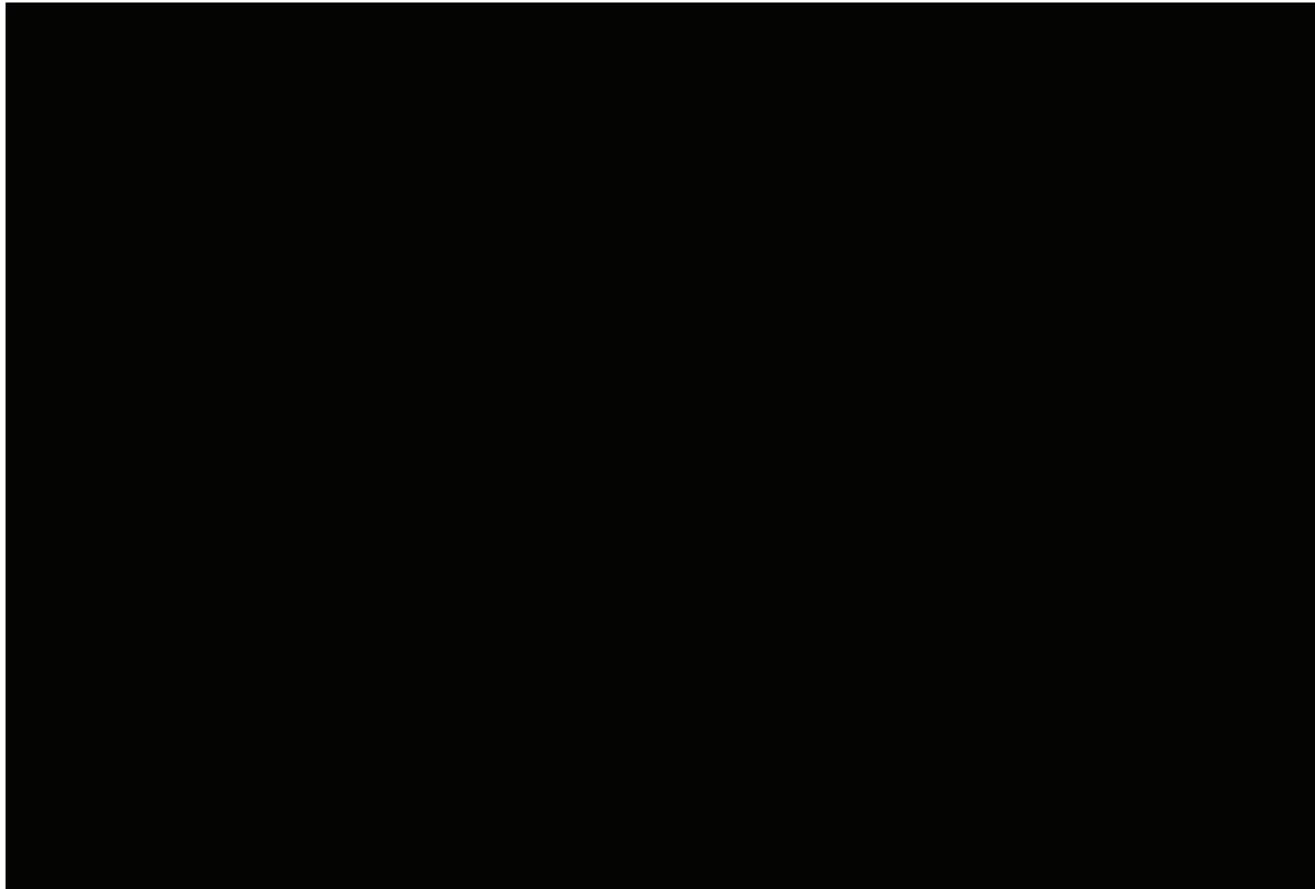
the microchannel,” i.e., “just the area as the liquid exits [] the microchannels.” *Id.* at 120:8-17. Therefore, Dr. Pokharna’s opinion mapping the “outlet opening” to the entire “first outlet region” is inconsistent with Mr. Lyon’s testimony.

73. Mr. Lyon further testified that in the embodiment shown in Figure 2 of the ’266 patent, the “outlet opening” from a centrally-located microchannel was larger than the “outlet opening” from an outer microchannel because of the scalloped plate. *See id.* at 119:12-120:14. Indeed, the scalloped inner edges on the plate was used in Mr. Lyon’s alleged invention to reduce the length of enclosed microchannels in the central area, thereby reducing their flow resistance and generating higher flow rates in the central microchannels for more effective cooling in the central area (which is often the hottest portion of an electronic chip). *See ’266 patent, 12:3-18.* Once there is no covering plate over the microchannels (i.e., once the microchannel flow passes the scalloped inner edge), the flow will no longer remain confined between the walls of the narrow microchannels, but instead will almost immediately exit vertically. This is because microchannels have very high flow resistance and so the fluid will prefer to take the lowest resistance path (which is to not continue flowing inside the microchannels when there is no overhead wall constraining the flow to the microchannels). Thus, the larger “outlet opening” in the central region meant that there is more length of *uncovered* microchannels. In the Asetek designs, however, the straight inner edge of the plate (Gen 4) or gasket (Gen 5, 6, 7) results in equal uncovered lengths for all the microchannels. The fact that the outer edges of the gasket have a slight taper/bevel near the ends in some Asetek designs is immaterial, because by the time fluid reaches the taper/bevel, the fluid has already exited the microchannels and is in the header region, and hence the taper/bevel has no significant impact on flow velocities in the individual microchannels.

74. More specifically, in the accused Asetek Generation 4, 5, 6, and 7 devices, the plate or gasket over the microchannels is not scalloped (e.g., as in Figure 2 of the ’266 patent), rather the edge of the plate or gasket is straight and extends to the ends of the microchannels. Therefore, the “outlet opening” from each microchannel is the same size. That is, the “outlet opening” from a centrally located microchannel is the same size as an

“outlet opening” from at least one of the outer microchannels. Accordingly, claim 15 of the ’266 patent is not infringed by the accused Asetek Generation 4, 5, 6, and 7 products.





VI. NOTICE AND SUPPLEMENTATION

85. For the purpose of preparing this Non-Infringement Report, I have reviewed the materials and made the inquiries that I believe are appropriate considering the evidence available at this time. I understand that I will have the right to supplement or amend this Report in the event that additional evidence or information pertinent to my opinions becomes available, and I plan to do so. I may also provide further rebuttal to any opinions of other fact and expert witnesses, should I be requested to do so.
86. I reserve the right to update my opinions based on any additional relevant information in any form. This may include, but is not limited to, CoolIT/Corsair's expert reports, deposition testimony and exhibits, pretrial briefs, trial testimony, etc.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 8th day of December, 2021.



David B. Tuckerman, Ph.D.